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Model School House Plan

OF

8, 12 and 18 ROOM SCHOOL HOUSE,

DESIGNED BY

C. H. GRIESE, Architect.

CLEVELAND. O.

1886.

13241

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MODEL SCHOOL-HOUSE.

PLANS PREPARED BY

C. H. GRIESE, ARCHITECT.

CLEVELAND, O.

Cleveland, Ohio, is justly celebrated for its school buildings. The plans prepared by me were awarded the first premium by the Paris, Swedish and Austrian Commissioners at the Centennial Exhibition at Philadelphia in 1876. A school building has been built from those plans in Cleveland, Ohio, and has verified the wisdom of the Commissioners. Every attempt to materially differ from those plans in Cleveland, Ohio, has resulted in failure to properly heat and ventilate the buildings, and necessitated expensive repairs. I have taken the plans of 1876 and made such minor improvements as experience has shown best, and have, I think, reached as near perfection as can be had in all requisites of a school building, and especially in heating, ventilating and lighting. I have obtained letters patent of the United States upon my system of ventilating. This system is the result of forty years' experience and study, both in Europe and the United States.

BRIEF DESCRIPTION.

The plan provides for a building of eight, twelve or eighteen rooms, each room suitable for sixty to seventy pupils. Each room is scientifically calculated in size, so that the proper amount of air is always in the room to meet the wants of the pupils. The heating in connection with my patent system of ventilation is so arranged that the whole space is heated. The heated air is kept in constant circulation and especially about the feet of the pupils. There is a constant flow of the foul air out by way of the floor at the rate of three miles per hour, and a constant inflow of fresh air to take its place. This never creates a draft. By actual experiments made during the winter of 1885–6, in thirty school buildings in Cleveland, the school building built upon these plans was the only one showing carbonic acid gas in quantity less than 8-10000 parts, the limit allowable for health.

OUTSIDE.

The outside presents a substantial brick or stone building, with a half story basement and one story above

for six rooms, and two stories above for twelve rooms, with an attractive hipped roof, giving a large and commodious attic.

BASEMENT.

The entrances are at each end of the building, two steps up when you enter the storm house. There being but two steps outside, all trouble with snow, ice and other elements is avoided. By descending a half story you reach the basement. There you enter a hall 28 feet by 74 feet. One large room in the basement is occupied by the boilers, coal rooms, etc. The other five rooms can be used as school rooms if necessary, but are usually and more properly used as play rooms by the pupils. The boiler and coal rooms have their own outside entrances. These basement rooms and hall are as effectually ventilated as the upper stories. Starting at the entrance again, by ascending one half story by broad steps you reach the first floor, or the school room floor proper. Here is the hall 29 feet by 58 feet, and the second floor hall, 29 feet by 72 feet, not broken by stairways, perfectly heated and ventilated. All Class and Cloak rooms can be regulated by one teacher in each story. On each side of these spacious halls are three school rooms 28x34x14 feet. each with its own cloak room opening both into the hall and school room. These cloak rooms are also perfectly ventilated. Each school room also opens directly into hall. These school rooms, in case of fire, can be emptied in one minute, even when filled with pupils to their utmost capacity. Upon entering from the hall all scholars pass in front of the teacher's desk. The desks for pupils are so arranged that the light comes to the pupils from the left side and back. And this is the case in all school rooms. All the available space on the walls is covered with blackboard. I claim that my plan is superior to all other school houses in the following: The scientific proportions of rooms, Perfect heating, Perfect ventilation, Perfect light for pupils.

The question on ventilation of school buildings has been seriously looked into, and I call upon the Medical and Technical men that they will find it done well.

All communications with school committees cheerfully answered and all proper information given.

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SPECIFICATION

OF

Model School House,

MADE AND PREPARED BY

C. H. GRIESE, CLEVELAND, OHIO.

EXPLANATION OF HOW WORKMANSHIP SHALL BE DONE, AND MATERIAL TO BE USED.

Forms, Dimensions, etc.

All to be strictly in accordance with the accompanying plans as hereinafter specified.

Parts not shown on the drawings are to be in general conformity with the corresponding parts, which are shown, and as will be directed.

In all cases the dimensions indicated by figures on the drawings are to take precedence to scale measurements.

The following conditions apply to each and every part of the aforesaid building.

The contractor is to find and provide, at his own cost, all kinds of labor and work, and furnish new material of the best quality, necessary for the proper erection of said building.

The contractor must bear all losses from accident, or otherwise, during the progress of the work, so that the Board of Education shall not have any incidental expense until said building shall be fully and finally completed according to the drawings, specifications, and directions of the Superintendent, and in accordance with the detail drawings.

The Board of Education shall have the right to make any alterations from the plans without invalidating or rendering void the contract, which alteration must be done without additional expense, unless their cost is more than is originally contracted for. The additional expense (in case there is any) to be agreed upon by the contractor and the committee on building, and committed to writing.

Should there be any alterations made during the progress of the building, whereby said building shall be decreased in value, then the contractor will be required by the committee on building and the architect, to estimate such decrease or difference at the same rate specified in original contract or contractor's figures. The decrease or difference in cost of said building shall be endorsed on the contract.

No alterations shall be made without the consent of the Superintendent on the construction and the committee on building.

HEIGHTS OF STORIES.

Basement to be 10 feet in clear between joists.

First story in clear to be 14 feet between joists.

Second story in clear to be 14 feet between joists.

All other heights and dimensions to be made according to plans, drawn to a scale of 8 feet to one inch, by C. H. Griese, architect, of Cleveland, Ohio.

EXCAVATING.

All to be made to the proper depth and dimensions, for cellar and cellar entrance, earth to be deposited where directed.

The floor of boiler room and the whole basement to be paved with flagging 3 inches thick and laid in morter. The pit is 3' 8" below the basement floor.

All the rubbish and debris to be taken away from the premises and the whole building to be left broom-clean when finished.

FOOTING STONE.

There will be footing stone under all outside basement stone walls, and under inside walls.

There will be two courses 6 inches thick, the lower stone projecting 12 inches on each side of walls above, the second projecting 6 inches on each side of walls above.

The first course of footing stone to be laid in a bed of mortar 3 inches thick, the second course to be laid in cement mortar, made of 1 part Akron cement and mixed with 3 parts of good sharp sand.

All corners to have 3 courses of footing stone, the first course projecting 1½ foot from face of upper structure walls.

All to have true flat beds and close joints, heading joints of upper course all to be laid over center of stone below.

No stone to be shorter than its width.

All trenches for footing stone to be well rammed and soaked with water before footing stone are laid.

PERCH STONE WORK.

All the exterior walls of basement and the two cellar entrances to be laid up with good large stone.

All of the stone to have true flat beds and square heading joints, properly worked and laid in mortar of fresh cement, consisting of 3 parts of clear, sharp sand, and one part of Louisville or Akron cement.

All the visible work on the inside shall be pick dressed and have smooth stuck joints; all walls to be properly bound with headers, running through the entire thickness of the wall.

The two outside basement entrances to be fine pick dressed work laid in courses, and to have a stone coping of clear stone, from Berea, Ohio, 18" wide and 8" thick, with a storm house of wood over it; this storm house has a door with a good lock and bolt, and hung with good wrought iron butts, 4x4, covered with good roofing tin. Sides lined with drop siding, (see carpenters' specification and details). The steps to be of the best Berea, Ohio, cut stone, (droved work).

Brick Work.

BASEMENT.

All parts on the drawings of a red color indicate brick work.

All brick to be of good and merchantable quality, well burned and true.

All brick laid in basement walls to be of hard brick, laid in Akron cement mortar, one part cement and 3 parts lake sand, every course must be grouted full, mortar of cement.

All walls must be laid up in a workmanlike manner, straight on plumb line, and joints on each side to be struck smooth and clean.

All arches must be worked solid and accurate, and every brick must be bedded solid, 12 inch arch, one 8 inch bonding and one 4 inch roller.

All brick work between joists to be neat, clean and solid workmanship, and joints must be flush and neatly struck.

All ventilation stacks to to be laid up straight and accurately and joint struck, clean and smooth, and well broomed.

All openings in stacks to be arched with an 8 inch bonding arch, in addition there will be a double wrought iron lintle over the opening for registers, which will be seen on detail drawings.

All chimney flues to be plastered very smooth and to be worked over a cylinder of wood.

All ventilation flues in brick walls to be lined with tin, as the work progresses.

The fresh air flues, which are in each room under ceiling, must be made according to the architect's explanation and detail drawings. No extra charge for such kind of work. All registers

must be set in walls by brickmason. Sufficient openings must be left by mason in which all steam pipes for radiators can be put up.

All door and window openings to have relieving arches turned over the wooden lintels.

The inside walls (colored red) on attic plan to be carried up the underside of roofboards, the openings in these walls to have bonded brick arches 8 inches thick.

The chimneys over roof to be of brick, trimmed with stone.

Thickness of wall can be seen on the different plans and sections.

All walls to be hollow.

All hollow spaces must be kept clean from mortar and debris and means must be made to clear the debris every night.

If this cleaning be neglected by the contractor, the superintendent shall have the same done, and deduct the cost from the next estimate of the contractor.

The cast-iron water pipes, 20" diameter, must be built in by the contractor, and well fastened with anchors.

The contractor must also put the iron bars in the corners, according to the direction of the Superintendant.

All brick to be good merchantable brick; no soft brick will be accepted.

All brick, before they are carried on the building, must be sprinkled with water. No dry brick will be allowed in the walls.

Teachers' waterclosets, slopbasins, sewering for same, and boiler room in basement, also a water drawer with supply and waste pipe, to be in the first and second story. Also speaking tubes from any room to the Principal's room and office. All these preparations in mason work, cutting and patching, must be done by bricklayer, stonemason, plasterer and joiner.

Also all cutting and boxing for gas and other arrangements must be done by the different mechanics, as bricklayers, plasterers, joiners and carpenters.

Upperstructure Brickwork.

BACKING AND INSIDE PARTITIONS.

All brick above basement for the inside partitions and backing up of exterior walls to be same quality as before stated for basement. This brickwork to be laid up in mortar composed of sharp sand and newly burned lime. Every 6th course to be a header course.

OUTSIDE LINING.

All exterior brick lining to be stock brick, sound and hard burned.

These bricks to be laid up solid, plumb and level, and selected to a uniform color, and wet before laid in the walls, and flushed up for every course, and worked in a regular plumb bond, and tied in every 5th course with a clip header. The joints to be struck nicely, and the brick must be kept clean.

WROUGHT AND CAST IRON WORK.

There are to be 4 iron doors in the basement of the 12 room schoolhouse, and 2 in the 8 room school house in the basement, each made of No. 12 sheet wrought-iron, which is to be framed on the edge with $2\frac{1}{2}$"x$\frac{1}{4}$" strips, and to have 2 hinges and a latch of wrought iron, all securely rivited to doors. The frames to be of wrought iron, having the necessary fixings for receiving the hinges and latches. These doors to be placed at the base of the main stack in basement.

The 4 doors in attic in 12 room schoolhouse, and 2 doors in attic in 8 room schoolhouse, of No. 12 sheet wrought iron, having a latch and 2 hinges, all to be the same as the basement doors, and to be hung on cast iron bricks, which are to be walled in, consequently no frame is necessary, but the plastering around.

These openings to be perfectly straight, so that the door may be made to fit close.

There will be for each register opening in first and second story hall, 2 wrought iron beams 4" wide and ½" thick; also for the openings in basement and attic, and in water closet in basement the same.

There are to be for each chimney or shaft, treads 12 inches apart and 1 inch in diameter, to be placed in one corner of shaft, for a ladder to get up on the inside of stack. These treads must be worked in by mason and fastened into wall or masonry 8 inches long.

All anchors of chimney stack must be wrought iron and well built in walks.

The chimney stack to be cast iron, (smoke pipe) 20 inches in diameter, ½" thick metal, and to have cast iron plates, and 2 seven inch I beams for plate to rest upon.

Iron bolts for wall plates to be 2 feet long, ¾ inch thick, and to be made according to directions. All anchoring for joists to be ¼"x2" wrought iron.

All clamps and bolts for roof trusses to be wrought iron and made as shown in details.

The cast iron smoke stack to have a grate with an ashpit door under, and a door for firing in cold weather, representing a stove. The other three (3) ventilation stacks will have stoves or coils of steam pipes for heating the air. The large smoke pipes will have a cast iron collar the same size as the pipes.

VENTILATION.

There will be 6 registers in each of the school rooms, in the floor, each carrying one square foot of foul air between the joists to a box which is to be constructed under cloak rooms, and some under ceiling in basement, some in walls vertically, and from there it is to be led into the warm air chamber in main ventilation stack.

The foul air in halls will be led direct to the warm air chamber through registers of 20"x20 inches. All foul air ducts are to be lined with tin.

The fresh air ducts under windows to be made as shown in section, lined with bright tin, the outside openings to be closed with a brass wire screen, ¼ inch mashes.

The registers in each room, under ceiling, for cold air to be 14"x20", each of which is to be connected with a light iron rod for opening and shutting said registers from school room floor.

SEWER.

To be a 9 inch sewer pipe in basement to drain off water from boiler, also connect waiste pipe from basement, first and second stories, and janitor's closet and sink in basement and all conductor pipes.

LATHING AND PLASTERING.

The ceiling of basement, first and second stories, to be cross furred, walls and wood partitions between recitation room to be lathed with the best quality of ⅜ inch white pine, sawed and seasoned lath, properly nailed and bonded.

The walls and ceilings of all the school and recitation rooms to have 3 coats of plastering, the last coat to be hard white plaster finish.

The halls and stairways shall have a coat of plaster, which is to be floated with a full float and blocked off in imitation of stone, joints of blocking to be rubbed with a joint iron.

All walls to be plastered down to floors, having two coats of plaster, the last coat to be gauged with plaster of Paris.

The floors of first and second story shall be deadened with one inch of coarse mortar.

BLACKBOARDS.

Blackboards to be placed as directed, and done by contractor of plastering, according to C. H. Griese's mixture of mortar for blackboards, all ground work for blackboards must be done of 1 part White's Portland Cement and 2 parts of lake sand, and to the satisfaction of the architect.

All angles and corners to be plastered perfectly straight and and plumb, and plastering to be free of shipcracking.

CUTSTONE WORK.

The following parts shall be of cutstone, namely:

There will be 2 stones 5' 0"x6' 0" and 6" thick, laid in the two basement coal shutes on a level of 45 degrees.

The Ashler work around the entire basement story above ground line, to be fine crandled word with a margin line on the long joists; all corner headers of ashlar work shall show 12" on their return; ashlar to be from 6" to 8" thick.

The steps and coping (excepting flagging, which is to be sawed,) of basement entrances to be tooled work.

All outside door sills to be droved work.

All door and window caps, belt courses and window sills above basement to be polished work.

The platforms for main entrances to be 8" thick droved work, the size and shape as marked on plans.

The chimney caps and base to be droved work.

All of the above work to be made of clear white sandstone from Independence, Ohio.

The contractors for all of the above specified work shall, at his own cost and expense, furnish all the labor, work and materials necessary, of the best of their several kinds, for the erection and completion of the several parts, in a good and workmanlike manner, and with the true intent and meaning of the several specifications and drawings, and to the satisfaction and acceptance of the Superintendent and the Board of Education.

Carpenter's Specification.

FRAMING.

Joists for first and second stories to be 3"x14", set 12" to centers.

Joists of cloak rooms to be 2"x8", set 12" to centers.

Attic joists to be 2"x14, set 18" to centers; the end of the attic joists shall rest upon 2"x14" scantling spiked on side of cord beam, scantling projecting 2 inches below the bottom of beam.

All joists to be guaged to a regular width and shamfered about ½" in their length and anchored to the brick walls with iron anchors and scantling.

Double trimmers are to be framed around all stair openings, chimney flues and warm air flues; the space between the brickwork of chimneys and trimmers to be no less than 3".

BRIDGING.

The joists in school and recitation rooms to be bridged every 4 feet; the halls every 3 feet.

All bridging to be done with 1½"x3" stuff nailed with 2 ten-penny nails to each end of every piece.

ROOF FRAMING.

There will be five principal rafters in roof, to be constructed as shown on drawings.

Chord beams to be 8"x16".

Purlines 8"x12".

Horizontal truss piece 8"x14".

Principal rafters 8"x14".

Studs and braces to be 6"x8", all to be constructed as per drawing.

All properly framed together and constructed in the strongest manner; all rods used for trusses to be of wrought iron 1½" in diameter.

Secure the foot of each principal rafter with a ½"x4" wrought iron stirrups.

All the necessary bolts, screws, nuts and washers are to be provided for, to make them complete and secure in every respect.

Hip rafters to be 6"x14".

Valley rafters 4"x14".

Common rafters to be 2"x6", set 18" to centers.

Collar beams for gable rafters 2"x8".

Wall plates for the end of principals and the pole plates of common rafters to be 4"x12".

All purlines, hip and valley rafters to be supported from attic floor where ever necessary.

All lumber such as timber, joists, rafters, etc , to be of pine where not otherwise specified.

ROOF-BOARDS.

All of the roof to be covered with $\frac{7}{8}$" well dressed common pine boards free from loose knots and rotten places.

SLATING.

The whole roof to be covered with tarred felt paper and slated with 10"x20" black and green slate of an unfading color, fastening each slate with 2 galvanized nails.

GALVANIZED IRON AND TIN WORK.

The top moulding of main cornice, ridge rolls and conductors are to be made of No. 26 galvanized iron, properly jointed, mitered, rivetted, braced and soldered.

All eave and valley gutters and flashing to be of the best quality of M. F. roofing tin, laid with flat-locked joints, well soldered; all eave and valley gutters to extend 12" underneath the slating.

To be flashing around all chimneys.

There will be 4 six-inch conductors leading down to ground, with an iron shoe at the bottom of each, of cast iron 4' long and connected with sewer; conductors to be fastened to brickwork with wrought iron holdfasts, so as to stand 4" clear of brickwork.

Scuttle hole door frame to be covered with tin.

VENTILATION FLUES.

There will be six ducts from each of the school rooms, 1 foot square, lined on all sides with tin; the above ducts to be led under the ceiling of cloak rooms in a box which is to be lined with tin, and to be brought through under cloak room into the main stack by an end piece of galvanized iron having a 3 inch flange on the inside and nailed to walls as per drawing marked B.

FLOORING.

The first and second story floors are to be deafened with $\frac{7}{8}$" well dressed common pine boards nailed on top of joists; 1"x2" strips to be nailed on these boards, filling mortar between these strips, which is to be done by the plasterer.

First and second story floors to be laid with narrow, well-dressed and kiln dried oak flooring, no board exceeding the width of 4" and to be $1\frac{3}{8}$" thick.

The floors in halls to be no more than $2\frac{1}{2}$" wide, the above flooring all to be laid when the plastering is finished, and then it is to be oiled.

Attic flooring to be $\frac{7}{8}$" common pine, free from loose knots and rotten places.

All of the above flooring to be tongued and grooved, and firmly blind nailed to each and every joist, and smoothed off when laid.

LINTELS AND PARTITIONS.

All door and window openings to have wood lintels 4'x12" (shamfered) to receive relieving arches.

The wood partition of recitation room to be 2'x6" scantling around door and window openings.

FURRING.

Provide $\frac{1}{2}$"x4" strips for the mason to wall into the brick joints to secure wainscoting.

WINDOW FRAMES AND SASH.

The two openings in basement for coal shutes to have oak frames 1¾" thick, 2' 2" wide, the door to be made of a double thickness of oak flooring ⅞" thick, hinged complete with wrought iron hinges and fastened on the inside with strong bolts.

All other window openings in basement, first and second story, to be provided with iron axle pulleys for double lining sash and to have box frames of pine lumber.

The heads of all frames and sash to be square on the inside.

All sash to be 1¾" thick, leveled back to glass; checked meeting rail, and double hung with iron weights and cotton sash-cords.

The bottom of each lower sash to have a brass sash-lift.

The above windows to have brass sash fasteners of the best quality.

Windows in attic will swing, hung on hinges.

The several window frames shall have all the beads, stops and fillets necessary to make them complete.

DOOR AND DOOR-FRAMES.

The outside door openings shall have fames 2¼" thick, with a large return bead on the outer edge; the doors to be 2¼" thick, rabbeted folding stiles; level framed; each door to be hung with 5"x5" japanned wrought iron butts, 3 to each door; the outside doors to swing to the outside of the building, and to be fastened to walls, when opened, with brass hooks.

The basement doors shall have a 1¾" frame, and doors to be 1¾" panel doors to be hung with strong hinges fastened with an iron rimlock, inside bolts and iron thumb-latches.

All inside door openings in first and second stories shall have frames 1¾" thick, with moulded transom rails; doors to be 8' 0" high, 3' 0" wide, 1¾" thick, level framed with 4 panels.

All inside doors shall be hung to swing as may be directed.

All these doors shall be hung with 5"x5" japanned butts, 3 to each door, and fastened with good tumbler locks, and to have good dark mineral knobs, japanned trimmings and two keys to each door.

All cloak room doors in halls to have a night latch; the knob to be separate.

The entrance doors to be fastened with rabbeted tumbler locks and inside bolts, the upper bolt having a hanging chain; each door having 8 keys and thumb-latches instead of knobs.

All door openings to have hardwood thresholds, except entrance doors, which are to be of cast iron.

INSIDE FINISH.

All school, cloak and recitation rooms in first and second story shall be wainscotted with narrow ⅞" clear pine lumber, not over 4" wide, tongued and grooved together and to be blind nailed to furring and left with a smooth surface; all to be fixed with vertioal beaded joints and moulded capping, which shall project sufficiently to recieve chalk and brushes of blackboards, as per detail drawing.

There will be wainscotting base around the several halls, platforms and stairways 12" high, 1⅜" thick.

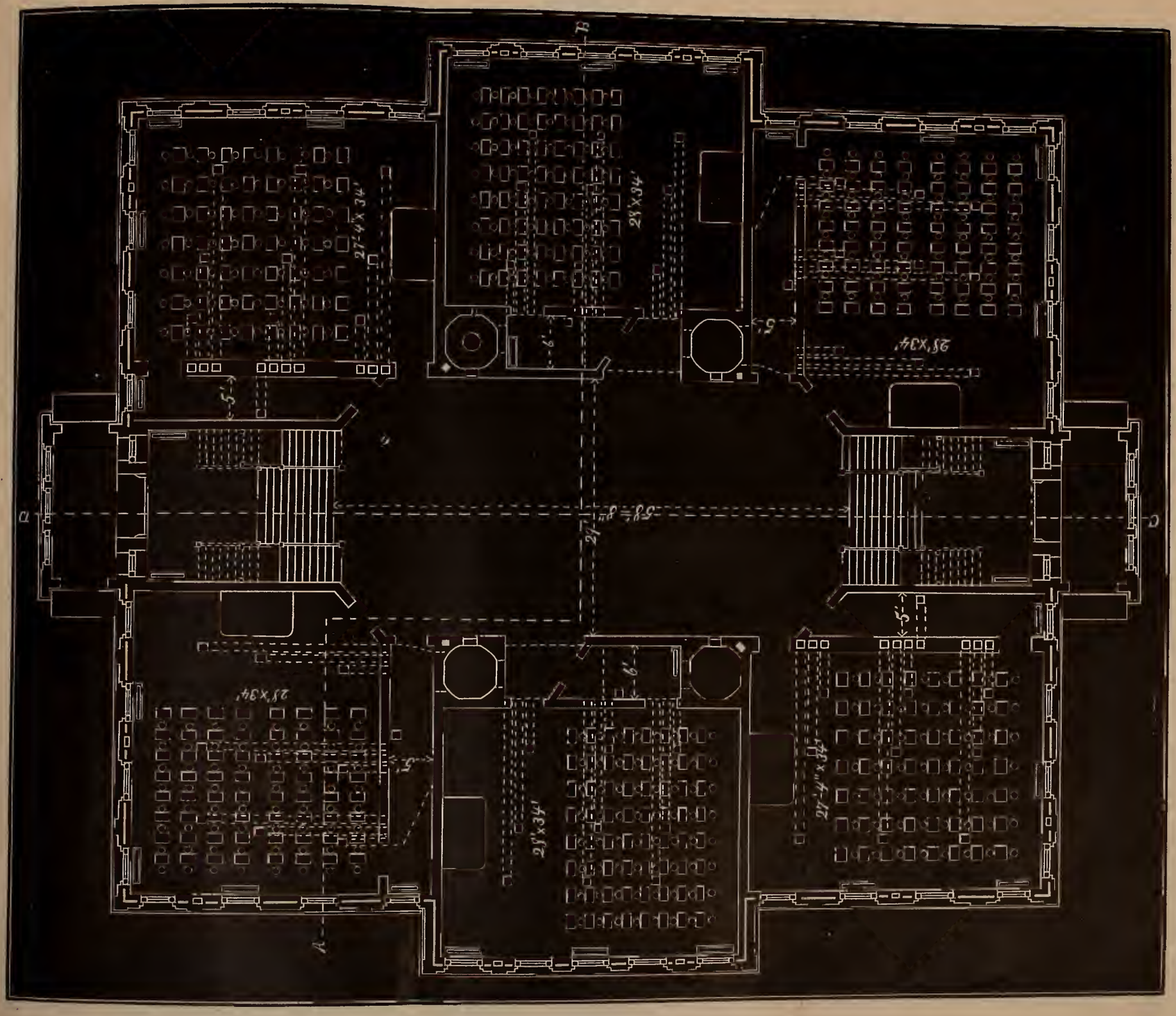
The finish around the several doors and windows shall consist of a 1¾" returned bead, which is to be put on after the plastering is completed; the same bead to continue on the upper part of blackboards and to be mitered into board around door and window openings.

Bead around door openings shall be fixed to the outer edge of door frame.

Bead around window openings shall be fixed to outer edge of casing.

Each of the cloak rooms to be fitted up with strong cleats and iron hooks, sufficient to accommodate 64 pupils.

All windows in first and second story shall have moulded seats and stools,



Model School House.

Twelve Rooms School - - - C. H. Griese, Arch., Cleveland, O.

First Story

May 4th 1886.

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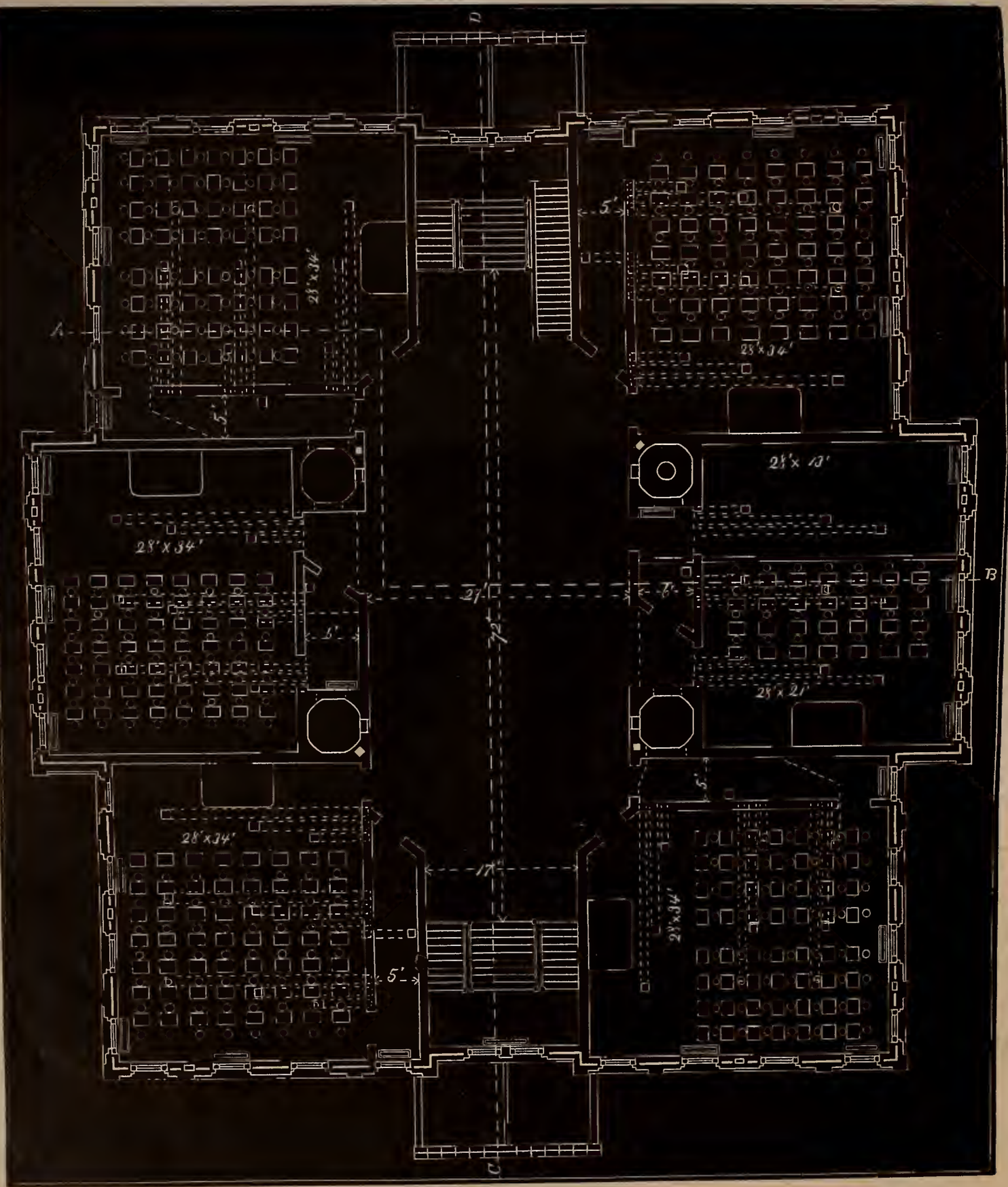
Living Room, Mr. & Mrs. H. Chase, Shaker Heights, Ohio



Model School House.

Twelve Rooms School - - - C. H. Griese, Arch., Cleveland, O.

Second Story.

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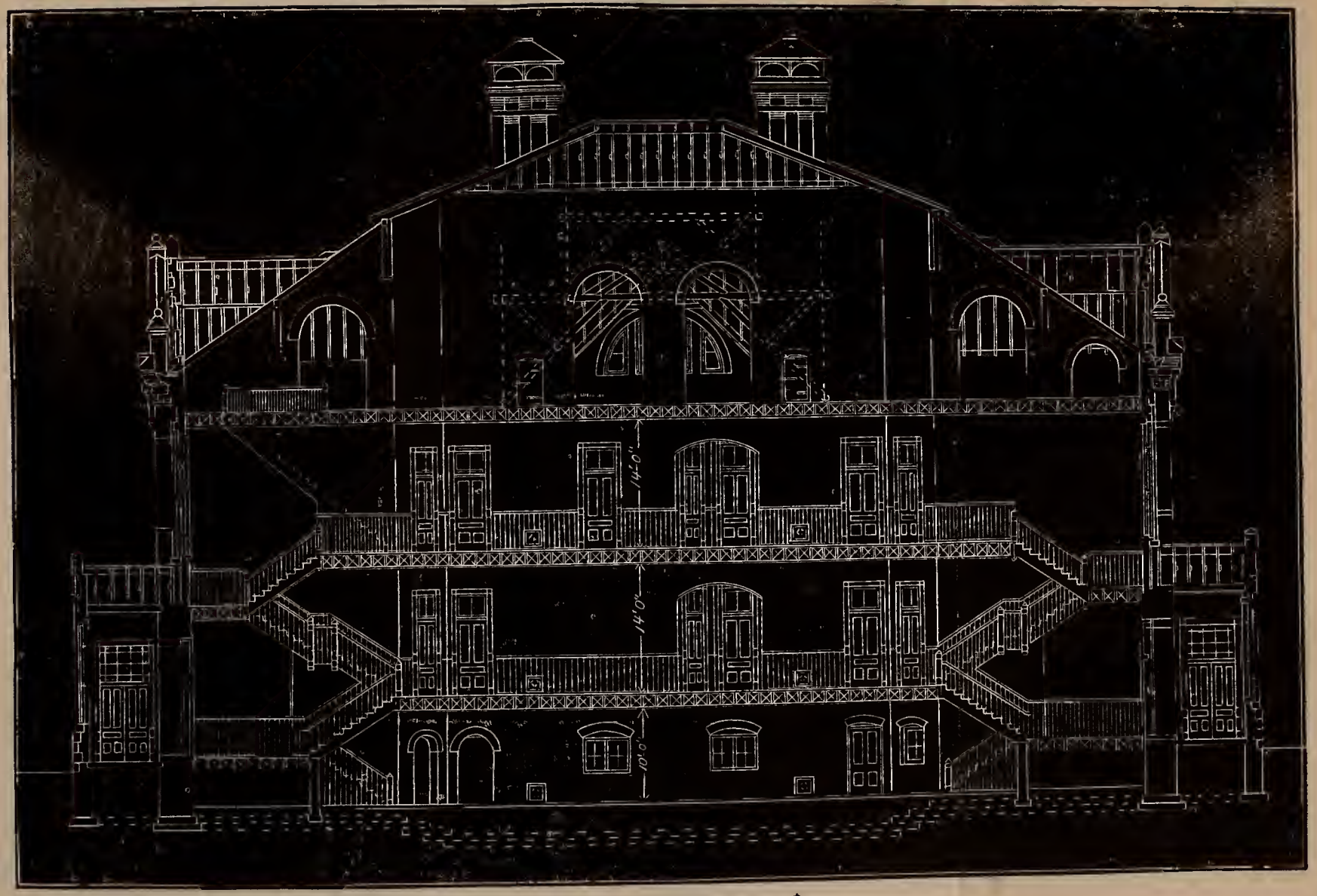

Model School House.

Twelve Rooms School - - - C. H. Griese, Arch, Cleveland, O.

Longitudinal Section on line C. D.

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Transverse Section on line A. B.

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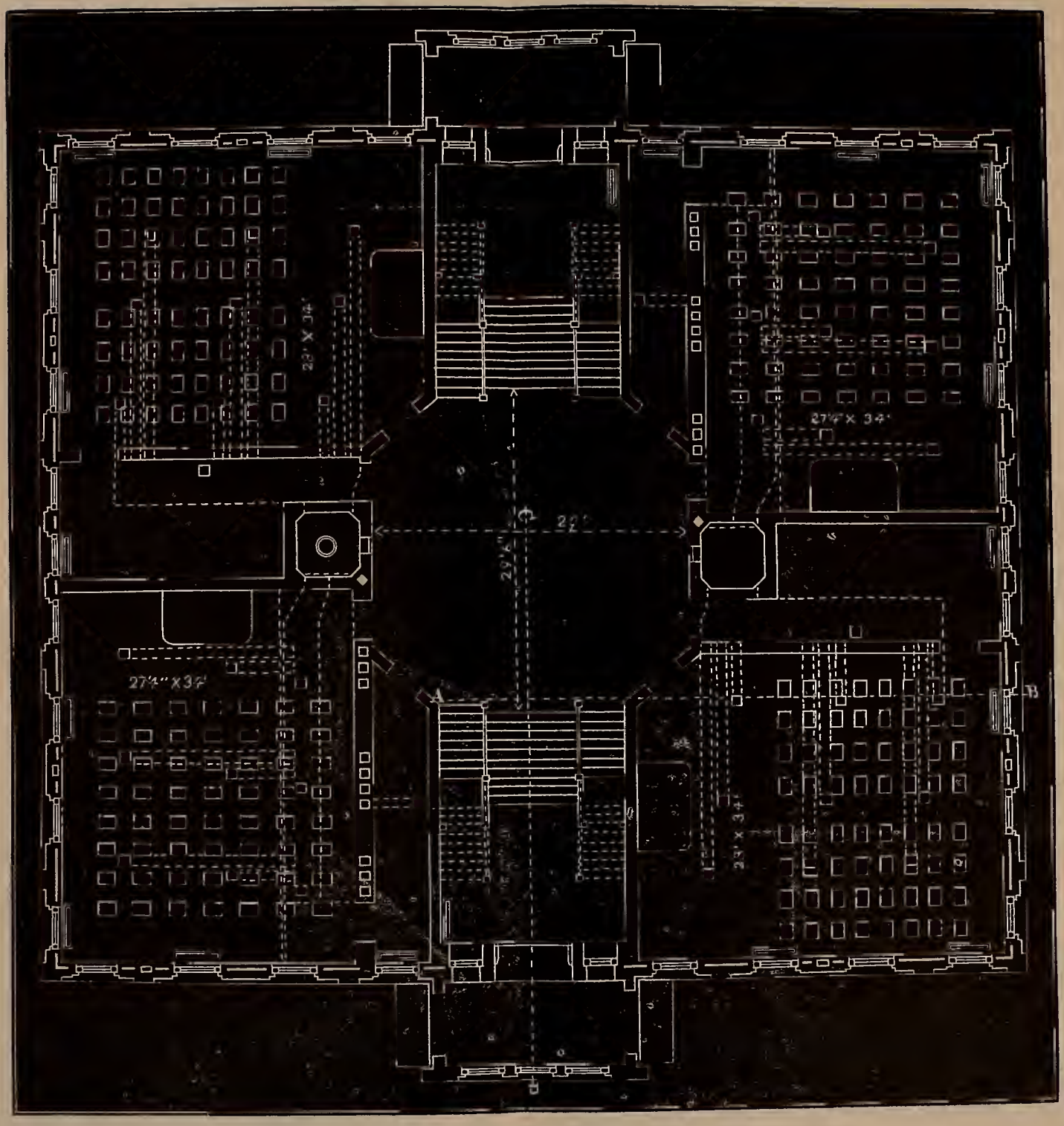

Model School House.

Eight Room School - - - C. H. Griese, Arch., Cleveland, O.

May 4th 1886.

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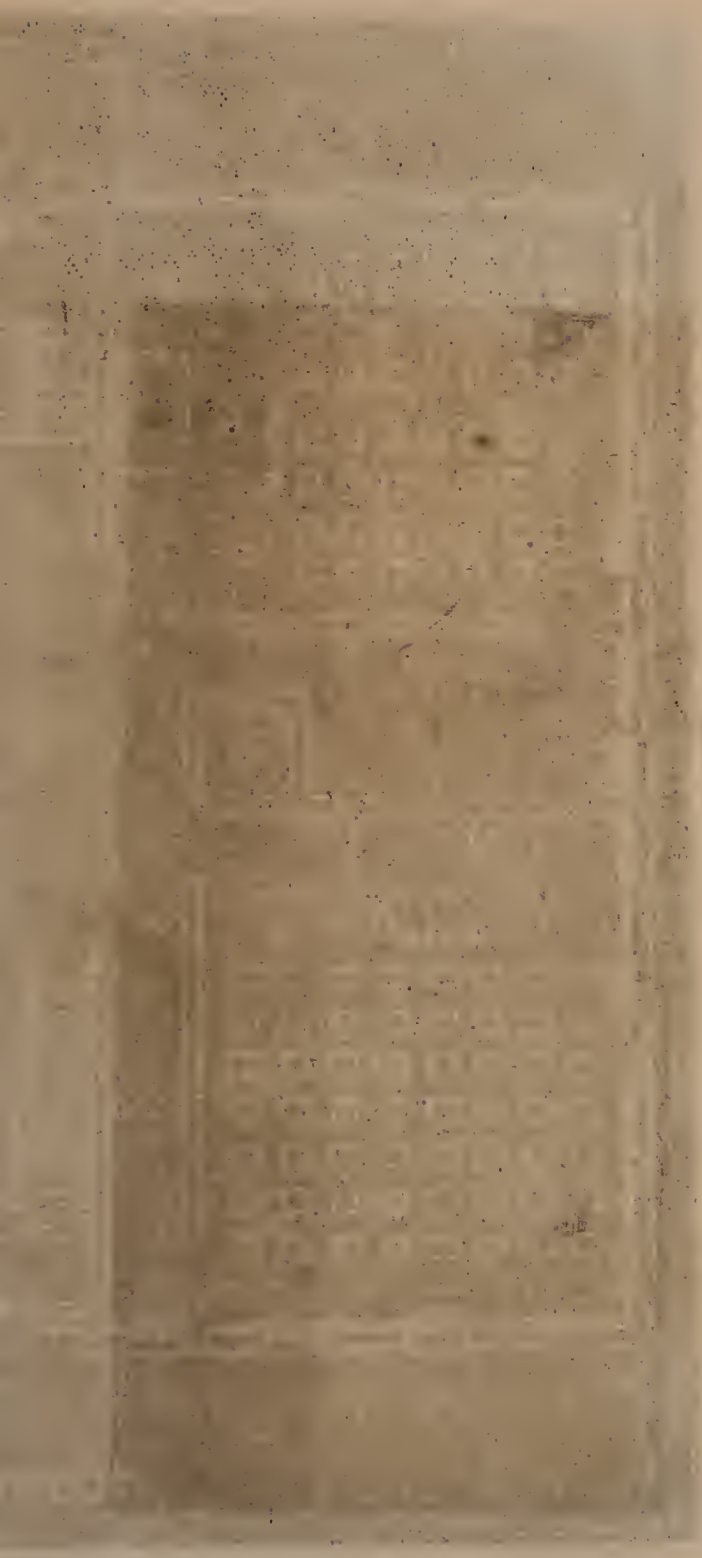

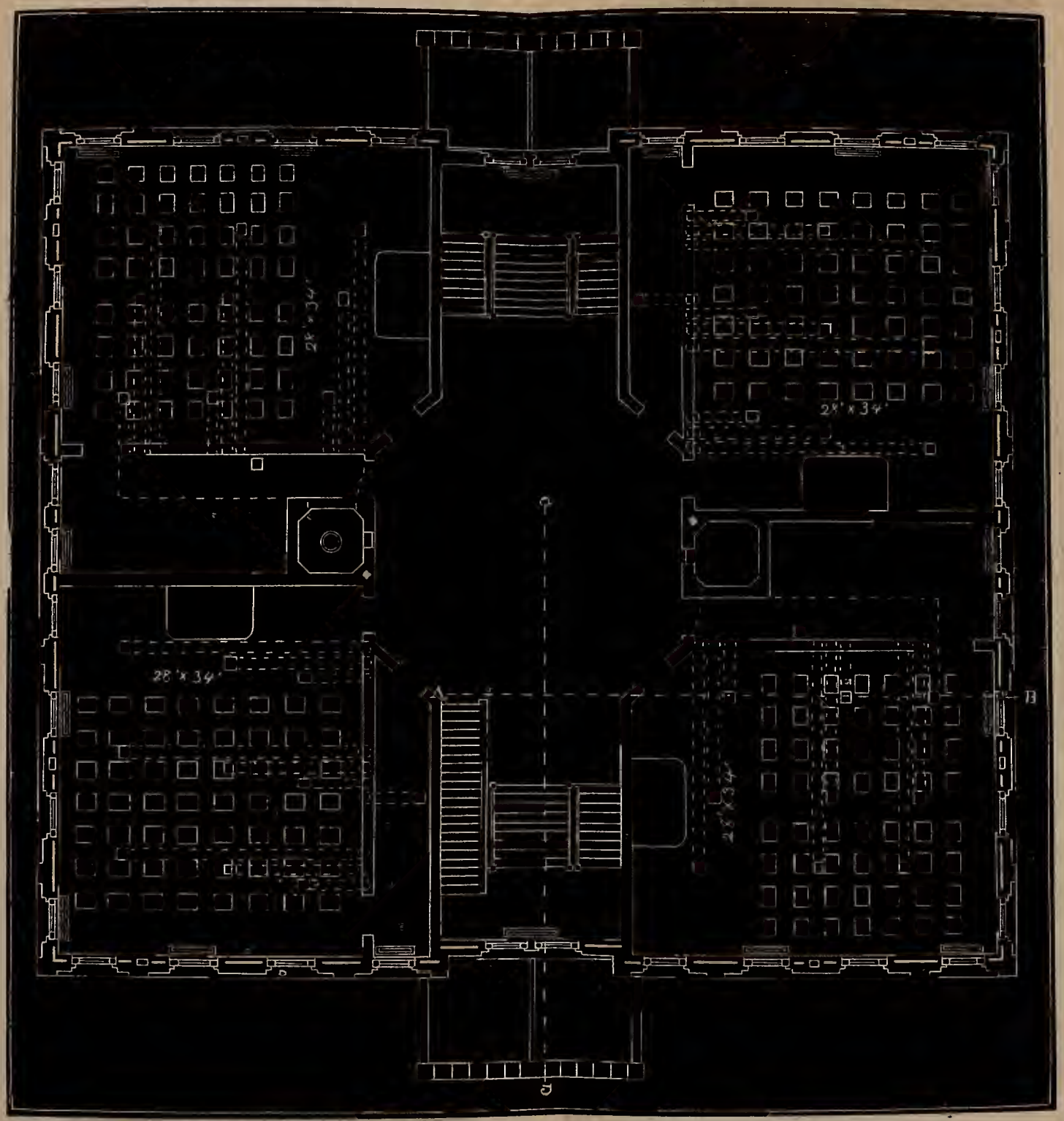

Model School House.

Eight Rooms School - - - C. H. Griese, Arch., Cleveland, O.

Second Story. May 4th 1886.

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Transverse Section on line A. B.

Longitudinal Section on line C. D.

Model School House.

Eight Rooms School - - - C. H. Griese, Arch., Cleveland, O.

May 4th 1886.

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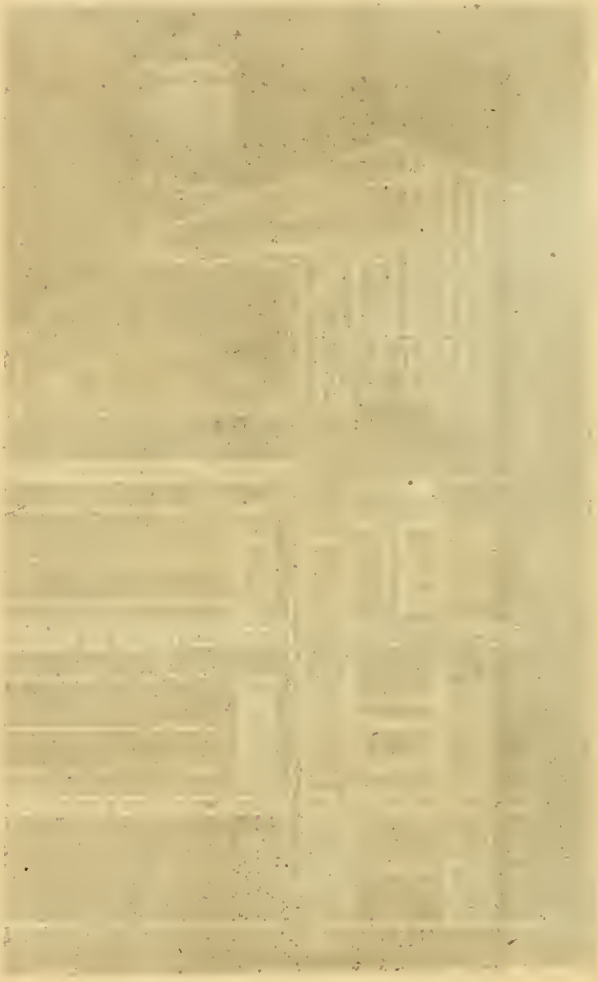

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